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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE.

Application No.: 10/726,638
Filing Date: December 4, 2003
Appellants: Ja-Hum KU et al.
Group Art Unit: 2812
Examiner: Richard A. Booth
Title: NICKEL ALLOY SALICIDE TRANSISTOR STRUCTURE AND
METHOD FOR MANUFACTURING SAME
Attorney Docket: 2421-000030/US

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July 11, 2009

APPELLANTS' REPLY BRIEF UNDER 37 C.F.R. § 41.41

Sir:

In response to the Examiner's Answer mailed May 12, 2009, Applicants request the appeal be maintained and supply the following arguments in reply under 37 C.F.R. § 41.41(a)(1).

I. STATUS OF CLAIMS

Applicants acknowledge the Examiner's indication that the status of the claims in the appeal brief is correct. Claims 1-34 are pending, and remain finally rejected, in the current application. Claims 1 and 15 are in independent form. No claim amendments are being filed in conjunction with this request. The claims are rejected as follows:

1. Claims 1-4, 7-9, 15-18, 26, 28-29 and 31-34 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2005/0176247 (Cabral Jr. et al., hereinafter "Cabral");
2. Claim 30 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Cabral;
3. Claims 5-6, 10-14, 19-20 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cabral Jr. et al. as applied to claims 1-4, 7-9, 15-18, 26, 28-29, and 31-34 above, and further in view of U.S. Patent No. 6,846,734 (Amos et al., hereinafter "Amos"); and
4. Claims 21-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cabral Jr. et al. as applied to claims 1-4, 7-9, 15-18, 26, 28-29, and 31-34 above, and further in view of U.S. Patent No. 6,498,080 (Chittipeddi et al., hereinafter "Chittipeddi").

See, e.g., Final Office Action dated July 3, 2008 ("Final OA"), p. 2.

Claims 1-34 are being appealed.

II. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Review is requested for the rejections of (i) claims 1-4, 7-9, 15-18, 26, 28-29 and 31-34 under 35 U.S.C. § 102(e) as being anticipated by U.S. Publication No. 2005/0176247 (Cabral Jr. et al., hereinafter "Cabral"), (ii) claim 30 under 35 U.S.C. § 103(a) as being unpatentable over Cabral, (iii) claims 5-6, 10-14, 19-20 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cabral Jr. et al. as applied to claims 1-4, 7-9, 15-18, 26, 28-29, and 31-34 above, and further in view of U.S. Patent No. 6,846,734 (Amos et al., hereinafter "Amos"), (iv) claims 21-25 under 35 U.S.C. § 103(a) as being unpatentable over Cabral Jr. et al. as applied to claims 1-4, 7-9, 15-18, 26, 28-29, and 31-34 above, and further in view of U.S. Patent No. 6,498,080 (Chittipeddi et al., hereinafter "Chittipeddi"). Appellants direct the Board's attention to the Response filed on September 3, 2008, which addresses the above rejections.

III. ARGUMENT

- A. CLAIMS 1-4, 7-9, 15-18, 26, 28-29 AND 31-34 UNDER 35 U.S.C. § 102(E) AS BEING ANTICIPATED BY U.S. PUBLICATION No. 2005/0176247 (CABRAL JR. ET AL., HEREINAFTER "CABRAL");**
- B. CLAIM 30 STANDS REJECTED UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER CABRAL;**
- C. CLAIMS 5-6, 10-14, 19-20 AND 27 UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER CABRAL JR. ET AL. AS APPLIED TO CLAIMS 1-4, 7-9, 15-18, 26, 28-29, AND 31-34 ABOVE, AND FURTHER IN VIEW OF U.S. PATENT No. 6,846,734 (AMOS ET AL., HEREINAFTER "AMOS"); AND**
- D. CLAIMS 21-25 UNDER 35 U.S.C. § 103(A) AS BEING UNPATENTABLE OVER CABRAL JR. ET AL. AS APPLIED TO CLAIMS 1-4, 7-9, 15-18, 26, 28-29, AND 31-34 ABOVE, AND FURTHER IN VIEW OF U.S. PATENT No. 6,498,080 (CHITTIPEDDI ET AL., HEREINAFTER "CHITTIPEDDI").**

In the Response to Arguments section of the Examiner's Answer, it is stated that "Cabral, Jr. et al. discloses embodiments including the claimed alloying elements in the claimed compositions and therefore it would be expected that a similar result would be achieved with the reacting process step, particularly since the temperature range of the reacting step of 250-600 Celsius in the reacting step of the instant application (see paragraph [0016] of the instant application)".¹ Appellants respectfully reiterate that the Examiner does not provide the required objective evidence or cogent technical reasoning to support his conclusion of inherency, and therefore, has failed to meet his burden of establishing a proper prima facie case of anticipation regarding claims 1-4, 7-9, 15-18, 26, 28-29 and 31.²

¹ See Examiner's Answer mailed May 12, 2009 ("Answer"), p. 7, lines 12-18.

² See MPEP § 2112 citing *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art).

In response to the Examiner's claim that the Appellant has not provided any evidence or reasoning as to why elements of substantially the same composition when heated at substantially the same temperature would not produce the results as claimed in the instant application,³ Cabral actually discloses that the nickel alloy layer is a single layer, and thus, **teaches away** from a nickel silicide layer having an upper and lower layer as recited in independent claims 1 and 15.

As is clear from FIG. 2 of Cabral reproduced below, following formation of the Ni alloy layer, an annealing process step is performed which converts a portion of the metal alloy layer into a **non-agglomerated** Ni alloy monosilicide 1 atop a Si-containing material 10.⁴

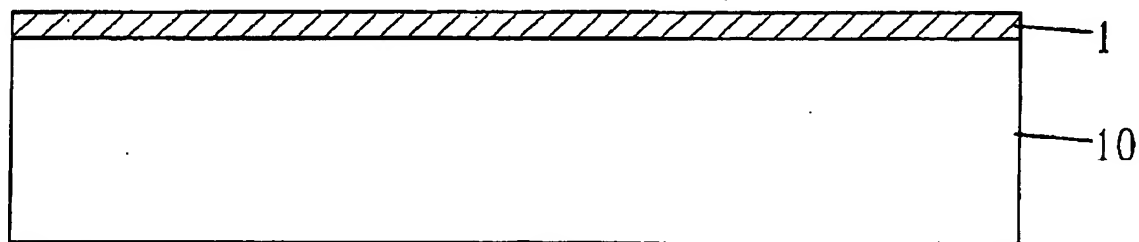


FIG. 2

Therefore, Appellants respectfully submit that Cabral does not teach or suggest reacting the nickel alloy layer with the exposed silicon surface to form a nickel silicide layer having an upper layer and a lower layer, wherein the alloying metal is preferentially segregated in the upper layer as recited in independent claim 1, or reacting a portion of the nickel alloy layer with the exposed silicon surface to form a nickel silicide region, and removing an

³ See Answer, p. 7, lines 18-21.

⁴ See Cabral, paragraphs [0045] and [0049].

unreacted portion of nickel alloy layer from the semiconductor substrate, wherein the nickel silicide region includes an upper layer and a lower layer, and further wherein the alloying metal is preferentially segregated into the upper layer as recited in independent claim 15, but rather teaches a single non-agglomerated Ni alloy monosilicide layer.

Claims 2-14 and 16-34 are allowable at least for depending from an allowable base claim. Therefore, withdrawal of the rejection of claims 1-34 under either 35 U.S.C. § 102(e) or § 103(a) is respectfully requested.

IV. CONCLUSION

Appellants respectfully maintain their request that the Board reverse the Examiner's rejection of the pending claims 1-34.

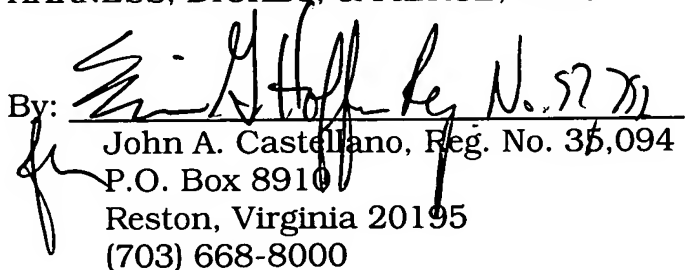
If the USPTO believes that personal communication will further the prosecution of this application, the Office is invited to contact Erin Hoffman, Reg. No. 57,752, at the telephone number below.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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